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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/561,280

03/19/2007

Shingo Saito

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SAMPSON & ASSOCIATES, P.C.
50 CONGRESS STREET
BOSTON, MA 02109

EXAMINER

NGUYEN, TU T

ART UNIT

PAPER NUMBER

2886

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DELIVERY MODE

10/01/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/561,280	Applicant(s) SAITO ET AL.	
	Examiner TU T. NGUYEN	Art Unit 2886	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/13/2008</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

Figure 18 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Abstract

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The abstract of this application should be limited to 150 words.

Claim Objections

Claim 6 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim 5. See MPEP § 608.01(n). Accordingly, the claim 6 has not been further treated on the merits.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 24 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims are directed to a judicial exception; as such, pursuant to the Interim Guidelines on Patent Eligible Subject Matter (MPEP 2106)), As explained in a memorandum dated May 15,2008, entitled "Clarification of 'Processes' under 35 USC § 101", a method claim must meet a specialized, limited meaning to qualify as a patent-eligible process claim. As clarified in *Bilski*, the test for a method claim is whether the claimed method is (1) tied to a particular machine or apparatus, **or** (2) transforms a particular article to a different state or thing. This is called the "**machine-or-transformation test**". It should be noted that the machine-or-transformation test from *Bilski* is slightly different from the test explained in the May 15 Clarification memo, which was based on the Office's interpretation of the law prior to *Bilski*.

For this application, claim 24 is directed to a computer-program recording medium. However, the medium has not been clearly defined in the specification or claim. The medium should be defined, such as a CDrom or a hard drive ...

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over
Wraback et al (6,476,596) in view of Kono et al ("Coherent Detection of Mid-infrared
Radiation up to 60 THz with an LT-GaAs Photoconductive Antenna", IEEE Proceedings-
Optoelectronics, June 2002, pp 105 to 109).

With respect to claim 1, Wraback discloses a light-waveform measuring device comprising: gate-pulse-light generating means 64 (fig 13, "pump pulse" 62); measurement-light generating means 64 (fig 13, "probe pulse" 63); and light-detecting means 67 (fig 13) for detecting measurement light, , the gate pulse light 63 (fig 13) is directed to the light-detecting means 67 (fig 13) to generate carriers therein, a physical quantity based on the carriers is measured, and an electric field of the measurement light is measured on the basis of the physical quantity ("detecting the amplitude and phase of terahertz electromagnetic waves" column 1, lines 20-24), the gate pulse light

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has a pulse width smaller than a period of the measurement light (column 2, lines 33-36).

Wraback does not disclose both of gate pulse light and the measurement light being coherent lights, the measurement light is coherent light having a wavelength smaller than those of a near-infrared region. Kono discloses a terahertz spectroscopy comprising coherent lights ("coherent detection", introduction section).

It would have been obvious to modify Wraback with the coherent lights taught by Kono and having the wavelength smaller than those of a near-infrared region as claimed to measure different type of sample.

With respect to claim 2, Wraback does not disclose the gate pulse light has a pulse width of 100 fs or less. However, it would have been obvious to modify Wraback with different pulse width for different testing purposes. The modification involves only routine skill in the art.

Claims 3-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wraback et al (6,476,596) in view of Kono et al ("Coherent Detection of Mid-infrared Radiation up to 60 THz with an LT-GaAs Photoconductive Antenna", IEEE Proceedings-Optoelectronics, June 2002, pp 105 to 109) and Takeshita et al (6,529,281).

With respect to claims 3-4, Wraback does not disclose the detector is constituted by a pair of electrodes which are placed on a substrate with a small gap provided therebetween, the substrate generates electrical charge when irradiated with light and

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the physical quantity is an electric current. Takeshita discloses a detector comprising a pair of electrodes 30 (fig 3). It would have been obvious to modify Wraback with the detector taught by Takshita to facilitate the measurement.

With respect to claims 5-6, Kono discloses using the measurement light is light with a frequency of 10 GHz to 67 THz ("20 THz" column 1, second paragraph, page 106).

With respect to claim 7, refer to discussion in claim 1 above for the system and claim 3 above for the pair of electrodes. Takeshita does not disclose a plurality pairs of electrodes. However, it would have been obvious to modify Wraback with a plurality of pairs of electrodes as claimed to measure different types of sample at a same time.

With respect to claims 8,10,11, Takeshita does not disclose the gate pulse light being directed to the plural pairs of electrodes diagonally with respect to the surfaces of detection electrodes to generate optical-path differences in the respective gaps between the pairs of electrodes. However, it would have been obvious a design choice to modify Wraback by directing the gate pulse light as claimed for different intended uses.

With respect to claim 9, refer to discussion in claim 1 above for the system. Wraback does not disclose the claimed real time. However, it would have been obvious to modify Wraback by measuring the electric field in real time to speed up the testing.

Claims 12-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wraback et al (6,476,596) in view of Kono et al ("Coherent Detection of Mid-infrared Radiation up to 60 THz with an LT-GaAs Photoconductive Antenna", IEEE Proceedings-Optoelectronics, June 2002, pp 105 to 109) and Duvillaret et al ("A Reliable Method for Extraction of Material Parameters in Terahertz Time-Domain Spectroscopy" IEEE Journal of Selected Topics in Quantum Electronics, Vol. 2, No. 3, September 1996, pp 739 to 746).

With respect to claims 12,18, refer to discussion in claim 1 above for the system. Wraback does not disclose the data processing means includes a data holding unit for holding the measurement data, and holds measurement data of an electric field of the measurement light which does not pass through a sample and an electric field of the measurement light having passed through the sample and makes a comparison between the electric field of the measurement light which does not pass through the sample and the electric field of the measurement light having passed through the sample to obtain a complex refractive index of the sample. Duvillaret discloses the claimed data holding unit (page 739, column 1, introduction section). It would have been obvious to modify Wraback with the data holding unit for allowing fast and reliable extraction of material parameters as taught by Duvillaret in the abstract section.

With respect to claims 13,19, Duvillaret disclose the claimed Fourier transform means (Introduction section).

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With respect to claim 14-15, Kono discloses using the measurement light is light with a frequency of 10 GHz to 67 THz ("20 THz" column 1, second paragraph, page 106).

With respect to claims 16,21,23, refer to discussion in claim 7 for the plurality of pairs of electrodes.

With respect to claims 17,20,22, refer to discussion in claim 8 for the diagonal pairs of electrodes.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Duvillaret et al ("A Reliable Method for Extraction of Material Parameters in Terahertz Time-Domain Spectroscopy" IEEE Journal of Selected Topics in Quantum Electronics, Vol. 2, No. 3, September 1996, pp 739 to 746).

With respect to claim 24, Duvillaret discloses a system comprising: inputting data obtained by applying a Fourier transform to measurement data of an electric field of a waveform of measurement light; and obtaining a complex refractive index on the basis of the Fourier transforms of the measurement light which does not pass through a sample and the measurement light which has passed through the sample, wherein the complex refractive index of the sample is obtained, on the basis of the measurement data of the electric-field waveform of the measurement light (Introduction section).

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Duvillaret does not explicitly disclose using a computer for computing the data. However, using computer for calculating massive data would have been well known in the art. It would have been obvious to modify Duvillaret by using a computer for calculating the refractive index of the sample to facilitate the measurement. The modification involves only routine skill in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TU T. NGUYEN whose telephone number is (571)272-2424. The examiner can normally be reached on T-F 7:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tarifur Chowdhury can be reached on (571) 272-2800 Ext. 86. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tu T. Nguyen/
Primary Examiner, Art Unit 2886

09/28/2009